

WHAT IS CLAIMED IS:

1. A storage media, comprising:

a plastic substrate having a substrate composition and a substrate thickness;

an optical layer having a layer composition different from the substrate composition;

a data storage layer disposed therebetween; and

a reflective layer disposed between the data storage layer and the substrate;

wherein the storage media has a radial deviation less than or equal to about 1.15 degrees at a radius of 55 mm.
2. The storage media of Claim 1, wherein a stiffness ratio of the optical layer to the substrate is about 0.5 to about 5 measured in tensile deformation at room temperature.
3. The storage media of Claim 2, wherein the stiffness ratio is about 0.7 to about 3 measured in tensile deformation at room temperature.
4. The storage media of Claim 3, wherein the stiffness ratio is about 1.25 to about 2.5 measured in tensile deformation at room temperature.
5. The storage media of Claim 1, wherein a swell ratio of the optical layer to the substrate is about 0.5 to about 5.0.
6. The storage media of Claim 5, wherein the swell ratio is about 0.75 to about 3.0.
7. The storage media of Claim 6, wherein the swell ratio is about 1.0 to about 2.5.
8. The storage media of Claim 1, wherein the optical layer has a layer thickness of greater than or equal to about 20% of the substrate thickness.

9. The storage media of Claim 8, wherein the layer thickness is about 20% to about 40% of the substrate thickness.

10. The storage media of Claim 9, wherein the layer thickness is about 25% to about 35% of the substrate thickness.

11. The storage media of Claim 1, wherein the optical layer has a layer thickness of about 0.2 micrometers to about 0.6 mm.

12. The storage media of Claim 11, wherein the layer thickness is about 0.2 micrometers to about 120 micrometers.

13. The storage media of Claim 1, wherein the substrate thickness is about 0.3 mm to about 2.5 mm.

14. The storage media of Claim 13, wherein the substrate thickness is about 0.6 mm to about 2.0 mm.

15. The storage media of Claim 14, wherein the substrate thickness is about 1.1 mm to about 1.5 mm.

16. The storage media of Claim 1, wherein the optical layer has a layer thickness, and a thickness ratio of the layer thickness to the substrate thickness is about 0.001 to less than 1.

17. The storage media of Claim 16, wherein thickness ratio is about 0.005 to about 0.5.

18. The storage media of Claim 17, wherein the thickness ratio is about 0.025 to about 0.1.

19. The storage media of Claim 1, wherein the layer composition and the substrate composition are plastics individually selected from the group consisting of thermoplastics, thermosets, and homopolymers, copolymers, reaction products, and combinations comprising at least one of the foregoing plastics.

20. The storage media of Claim 19, wherein the thermoplastics are selected from the group consisting of polyethylene, polypropylene, copolymers of polyethylene and polypropylene, chlorinated polyethylene, polyvinyl chloride, polymethylpentane; ethylene-tetrafluoroethylene copolymers, polyvinyl fluoride, polyvinylidene fluoride, polyvinylidene chloride, polytetrafluoroethylene, ethylene-vinyl acetate copolymers, polyvinyl acetate, diene-derived polymers and copolymers, polybutadiene, polyisoprene, polymers of ethylenically unsaturated carboxylic acids, functional derivatives of polymers containing ethylenically unsaturated carboxylic acids, acrylic polymers, poly(alkyl acrylates), poly(alkyl methacrylates), polyacrylamides, polyacrylonitrile, polyacrylic acid, alkenylaromatic polymers, polystyrene, poly-alpha-methylstyrene, hydrogenated polystyrenes, syndiotactic and atactic polystyrenes, polycyclohexyl ethylene, styrene-co-acrylonitrile, styrene-co-maleic anhydride, polyvinyltoluene, rubber-modified polystyrenes; polyamides, nylon-6, nylon-66, nylon-11, and nylon-12, polyacetals, polyesters, polyethylene terephthalate, polybutylene terephthalate, polycyclohexylmethyleneterephthalate, polycarbonates, polyestercarbonates, high heat polycarbonates, polyethers, polyarylene ethers, polyphenylene ethers derived from 2,6-dimethylphenol and copolymers with 2,3,6-trimethylphenol, polyethersulfones, polyetherethersulfones, polyetherketones, polyetheretherketones, and polyetherimides, polyarylene sulfides, polysulfones, and polysulfidesulfones, liquid crystalline polymers and homopolymers, copolymers, reaction products, combinations and composites comprising at least one of the foregoing thermoplastics, and wherein the thermosetting resins are selected from the group consisting of epoxies, phenolics, alkyds, polyesters, polyimides, polyurethanes, mineral filled silicones, bis-maleimides, cyanate esters, multifunctional allylic compounds, acrylics, alkyds, phenol-formaldehyde, novolacs, resoles, bismaleimides, melamine-formaldehyde, urea-formaldehyde, benzocyclobutanes, hydroxymethylfurans, isocyanates, benzocyclobutene resins, and homopolymers, copolymers, reaction products, and combinations comprising at least one of the foregoing thermosetting resins.

21. The storage media of Claim 1, wherein the radial deviation is less than or equal to about 1.0 degrees.

22. The storage media of Claim 21, wherein the radial deviation is less than or equal to about 0.7 degrees.

23. The storage media of Claim 22, wherein the radial deviation is less than or equal to about 0.5 degrees.

24. The storage media of Claim 23, wherein the radial deviation is less than or equal to about 0.25 degrees.

25. A storage media comprising:

a plastic substrate having a substrate composition and a substrate thickness;

an optical layer having a layer composition and a layer thickness, wherein the layer thickness differs from the substrate thickness and the layer composition differs from the substrate composition;

a data storage layer disposed therebetween; and

a reflective layer disposed between the data storage layer and the substrate;

wherein the storage media has a radial deviation less than or equal to about 1.15 degrees at a radius of 55 mm.

26. The storage media of Claim 25, wherein a stiffness ratio of the optical layer to the substrate is about 0.5 to about 5 measured in tensile deformation at room temperature.

27. The storage media of Claim 26, wherein the stiffness ratio is about 0.7 to about 3 measured in tensile deformation at room temperature.

28. The storage media of Claim 27, wherein the stiffness ratio is about 1.25 to about 2.5 measured in tensile deformation at room temperature.

29. The storage media of Claim 25, wherein a swell ratio of the optical layer to the substrate is about 0.5 to about 5.0.

30. The storage media of Claim 29, wherein the swell ratio is about 0.75 to about 3.0.

31. The storage media of Claim 30, wherein the swell ratio is about 1.0 to about 2.5.

32. The storage media of Claim 25, wherein the layer thickness is greater than or equal to about 20% of the substrate thickness.

33. The storage media of Claim 32, wherein the layer thickness is about 20% to about 40% of the substrate thickness.

34. The storage media of Claim 33, wherein the layer thickness is about 25% to about 35% of the substrate thickness.

35. The storage media of Claim 34, wherein the layer composition and the substrate composition are plastics individually selected from the group consisting of thermoplastics, thermosets, and homopolymers, copolymers, reaction products, and combinations comprising at least one of the foregoing plastics.

36. The storage media of Claim 25, wherein the radial deviation is less than or equal to about 1.0 degrees.

37. The storage media of Claim 36, wherein the radial deviation is less than or equal to about 0.7 degrees.

38. The storage media of Claim 37, wherein the radial deviation is less than or equal to about 0.5 degrees.

39. The storage media of Claim 38, wherein the radial deviation is less than or equal to about 0.25 degrees.

40. A storage media, comprising:

a plastic substrate having a substrate composition and a substrate thickness;

an optical layer having a layer composition different from the substrate composition;

a data storage layer disposed therebetween; and

a reflective layer disposed between the data storage layer and the substrate;

wherein the storage media has a radial deviation less than or equal to about 1.15 degrees at a radius of 55 mm, a stiffness ratio of the optical layer to the substrate is about 0.5 to about 5 measured in tensile deformation at room temperature, a swell ratio of the optical layer to the substrate is about 0.5 to about 5.0.

41. The storage media of Claim 40, wherein the stiffness ratio is about 0.7 to about 3 measured in tensile deformation at room temperature.

42. The storage media of Claim 41, wherein the stiffness ratio is about 1.25 to about 2.5 measured in tensile deformation at room temperature.

43. The storage media of Claim 40, wherein the swell ratio is about 0.75 to about 3.0.

44. The storage media of Claim 43, wherein the swell ratio is about 1.0 to about 2.5.